



SEQUENCE LISTING

<110> Neeper, Michael P.
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<120> SYNTHETIC HUMAN PAPILLOMAVIRUS GENES

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<141> 2003-12-04

<150> 09/642,405

<151> 2000-08-21

<150> PCT/US00/22932

<151> 2000-08-21

<150> 60/210,143

<151> 2000-06-07

<150> 60/150,728

<151> 1999-08-25

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<211> 1098

<212> DNA

<213> Artificial Sequence

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<223> Mutant, Codon-Optimized HPV16 E2

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<210> 5

<211> 297

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV6a E7

<400> 5

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tgcgacagca acgtgcgccct ggtggtgcag tgcaccgaga ccgacatccg cgaggtgcag 240
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<211> 318

<212> DNA

<213> Artificial Sequence

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<223> Codon-Optimized HPV18 E7

<400> 6

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tgcgccagcc agcagtaa 318

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<210> 7

<211> 1107

<212> DNA

<213> Artificial Sequence

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<223> Codon-Optimized HPV6a E2

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<210> 9

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<212> DNA

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<223> Codon-Optimized HPV16 L1 fragment

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<210> 10

<211> 129

<212> DNA

<213> Artificial Sequence

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<223> Codon-Optimized HPV16 L1 fragment

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<211> 129

<212> DNA

<213> Artificial Sequence

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<223> Codon-Optimized HPV16 L1 fragment

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<211> 132

<212> DNA

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<210> 13

<211> 129

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<223> Codon-Optimized HPV16 L1 fragment

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<211> 135

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<210> 15

<211> 135

<212> DNA

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<223> Codon-Optimized HPV16 L1 fragment

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<211> 135

<212> DNA

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<223> Codon-Optimized HPV16 L1 fragment

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<210> 18

<211> 129

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<211> 132

<212> DNA

<213> Artificial Sequence

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<223> Codon-Optimized HPV16 L1 fragment

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<220>
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<210> 24

<211> 24
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 <220>
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 <400> 31
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 <212> DNA
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 atctgcatcg ag 132

<210> 36
 <211> 131
 <212> DNA
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<220>
 <223> Codon-Optimized HPV16 E1 fragment

<400> 36
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 ggccttcagg c 131

<210> 37
 <211> 132
 <212> DNA
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<220>
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<400> 37
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 atctgccaga cc 132

<210> 38
 <211> 135

<212> DNA
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<220>
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<400> 38
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 gcagatggtg tggcg 135

<210> 39
 <211> 135
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<220>
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<400> 39
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 tacctgcaca tccag 135

<210> 40
 <211> 136
 <212> DNA
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<220>
 <223> Codon-Optimized HPV16 E1 fragment

<400> 40
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 gcacttgtag cgcaccagca gcagcaccac catgccccag ctgcaggcca ggctctggat 120
 gtgcaggtag aggcag 136

<210> 41
 <211> 132
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Codon-Optimized HPV16 E1 fragment

<400> 41
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 cccgagtgga tc 132

<210> 42
 <211> 129
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<220>

<223> Codon-Optimized HPV16 E1 fragment

<400> 42

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ggtgtcgcc                                     129

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<210> 43

<211> 129

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV16 E1 fragment

<400> 43

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agcgccttcc tgaagagcaa cagccaggcc aagatcgtga aggactgcmc caccatgtgc 120
cgccactac                                     129

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<210> 44

<211> 129

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV16 E1 fragment

<400> 44

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gtacttgatc cactggctca tgctcatctg cttctttctg gcgcgcttgt agtggcggca 120
catggtggc                                     129

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<210> 45

<211> 129

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV16 E1 fragment

<400> 45

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accgacaag                                     129

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<210> 46

<211> 130

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV16 E1 fragment

<400> 46
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 ggcggcgccg 130

<210> 47
 <211> 129
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Codon-Optimized HPV16 E1 fragment

<400> 47
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 gacgacaacc tgcgcaacgc cctggacggc aacctggtga gcatggacgt gaagcaccgc 120
 cccctggtg 129

<210> 48
 <211> 132
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Codon-Optimized HPV16 E1 fragment

<400> 48
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 gcggtgcttc ac 132

<210> 49
 <211> 126
 <212> DNA
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<220>
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<400> 49
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<210> 50
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 <212> DNA
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<220>
 <223> Codon-Optimized HPV16 E1 fragment

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<211> 23
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<210> 52
<211> 23
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<220>
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<400> 52
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<210> 53
<211> 21
<212> DNA
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<220>
<223> Codon-Optimized HPV16 E1 fragment

<400> 53
gagctgggtgc gccccttcaa g                21

<210> 54
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Codon-Optimized HPV16 E1 fragment

<400> 54
cttgaagggg cgcaccagct c                21

<210> 55
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Codon-Optimized HPV16 E1 fragment

<400> 55
ctgctgtgcg tgagcccat g                21

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<210> 56
<211> 21
<212> DNA
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<400> 56
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<210> 57
<211> 21
<212> DNA
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<220>
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<400> 57
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<210> 58
<211> 21
<212> DNA
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<220>
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<400> 58
gtagtggcgg cacatggtgg c 21

<210> 59
<211> 21
<212> DNA
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<220>
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<400> 59
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<210> 60
<211> 21
<212> DNA
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<400> 60
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<210> 61
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<212> DNA
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<400> 61
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<210> 62
<211> 24
<212> DNA
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<400> 62
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<210> 63
<211> 25
<212> DNA
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<400> 63
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<210> 64
<211> 38
<212> DNA
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<220>
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<400> 64
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<210> 65
<211> 99
<212> DNA
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<400> 65
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aacgacagca ccgacctgcg cgaccacatc gactactgg

99

<210> 66

<211> 104

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV16 E2 fragment

<400> 66

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<210> 67

<211> 108

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV16 E2 fragment

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acaccatgca ctacaccaac tggaccaca tttacatctg tgaggagg 108

<210> 68

<211> 104

<212> DNA

<213> Artificial Sequence

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<400> 68

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caagaacaag gtgtgggagg tgcacgccg aggccagggtg atcc 104

<210> 69

<211> 110

<212> DNA

<213> Artificial Sequence

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<223> Codon-Optimized HPV16 E2 fragment

<400> 69

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<210> 70

<211> 107

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon-Optimized HPV16 E2 fragment

<400> 70

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<210> 71

<211> 113

<212> DNA

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<220>

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<210> 72

<211> 101

<212> DNA

<213> Artificial Sequence

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<210> 73

<211> 98

<212> DNA

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<220>

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<400> 73

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<210> 74

<211> 110

<212> DNA

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<400> 74

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<210> 75
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 <213> Artificial Sequence

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<400> 75
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<210> 76
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<210> 77
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<210> 78
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<220>
 <223> Codon-Optimized HPV16 E2 fragment

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<210> 79
 <211> 45
 <212> DNA
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<400> 79
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<210> 80
<211> 21
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<220>
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<400> 80
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<210> 81
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<400> 81
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<210> 82
<211> 21
<212> DNA
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<400> 82
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<210> 83
<211> 17
<212> DNA
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<400> 83
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<210> 84
<211> 22
<212> DNA
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<400> 84
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 <210> 85
 <211> 109
 <212> DNA
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 <220>
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 <400> 85
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 <210> 86
 <211> 106
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Codon-Optimized HPV16 E7 fragment

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 <210> 87
 <211> 96
 <212> DNA
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 <220>
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 <210> 88
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 <212> DNA
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 <220>
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 <210> 89
 <211> 25
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<220>
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<400> 89
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<210> 90
<211> 20
<212> DNA
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<220>
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<400> 90
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<210> 91
<211> 105
<212> DNA
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<220>
<223> Codon-Optimized HPV6a E7 fragment

<400> 91
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gtgctggacc tgcagcctcc cgaccccgctg ggccctgcact gctac                105

<210> 92
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<212> DNA
<213> Artificial Sequence

<220>
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<210> 93
<211> 107
<212> DNA
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<220>
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<210> 94

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<211> 102
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 <220>
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 <400> 95
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 <210> 96
 <211> 26
 <212> DNA
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 <220>
 <223> PCR Primer

 <400> 96
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 <210> 97
 <211> 109
 <212> DNA
 <213> Artificial Sequence

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 <223> Codon-Optimized HPV18 E7 fragment

 <400> 97
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 <210> 98
 <211> 111
 <212> DNA
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 <220>
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 <400> 98
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<210> 99
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 <212> DNA
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<220>
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<210> 101
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<210> 102
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<400> 102
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<210> 103
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<210> 104
 <211> 92
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<210> 105
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 <223> Codon-Optimized HPV6 E2 fragment

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<210> 106
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<210> 111

<211> 94

<212> DNA

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<400> 111

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<210> 112

<211> 97

<212> DNA

<213> Artificial Sequence

<220>

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<210> 113
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 <213> Artificial Sequence

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<400> 113
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<210> 114
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<220>
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<400> 114
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 gtggttgccg ctgtccacgg ggccgatgtg ggcc 94

<210> 115
 <211> 95
 <212> DNA
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<220>
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<400> 115
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 cctgaagtgc ttccgctacc gctgaacga tcgcc 95

<210> 116
 <211> 96
 <212> DNA
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<220>
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<400> 116
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 ggtggcggtg gcgatcggtc aggcggtagc ggaagc 96

<210> 117
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<220>
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 <400> 117
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 gccagcagtt cctggacgtg gtgaagatcc ctccc 95

 <210> 118
 <211> 96
 <212> DNA
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 <220>
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 <400> 118
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 tggctgatgg tgggagggat cttcaccagc tccagg 96

 <210> 119
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 <400> 119
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 <210> 120
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 <212> DNA
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 <400> 120
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 <210> 121
 <211> 25
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 <210> 122
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<212> DNA
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<400> 122
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25

<210> 123
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<400> 123
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21

<210> 124
 <211> 23
 <212> DNA
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<400> 124
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23

<210> 125
 <211> 22
 <212> DNA
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<220>
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<400> 125
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22

<210> 126
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 126
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26

<210> 127
 <211> 97

<212> DNA
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<400> 127
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<210> 128
 <211> 98
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<210> 129
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 ccaggtggtg cccgcctaca acatcagcaa gagc 94

<210> 130
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<400> 130
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 tgtgggcctt gctcttgctg atgttgtagg cggg 94

<210> 131
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<400> 131

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<210> 132

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<211> 90

<212> DNA

<213> Artificial Sequence

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<400> 133

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<211> 92

<212> DNA

<213> Artificial Sequence

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<400> 134

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<210> 135

<211> 94

<212> DNA

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<400> 135

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<210> 136

<211> 100

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<400> 136

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<210> 137

<211> 93

<212> DNA

<213> Artificial Sequence

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<223> Codon-Optimized HPV18 E2 fragment

<400> 137

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<210> 138

<211> 96

<212> DNA

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<400> 138

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<210> 139

<211> 97

<212> DNA

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<400> 139

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<210> 140

<211> 97

<212> DNA

<213> Artificial Sequence

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<400> 140

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<210> 141
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<400> 141
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<210> 142
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<220>
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<400> 142
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<210> 143
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<400> 143
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<210> 144
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<400> 144
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<210> 145
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<400> 145
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<210> 146
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<400> 146
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<210> 147
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<400> 148
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<210> 149
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<400> 149
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<210> 150
<211> 26
<212> DNA
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<220>
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<400> 150

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26